

SEQUENCE LISTING

<110> Allen, Steve
Lee, Jian Ming

<120> Plant Protein Kinases

<130> BB-1171

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<150> 60/092,438
<151> July 10, 1998

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Gly Ala Ser Pro Leu Pro Ala Gly Val Ser Pro Ser Pro Ala Arg Ser
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Thr Pro Arg Arg Phe Phe Lys Arg Pro Phe Pro Pro Pro Ser Pro Ala
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Thr Phe Gly Phe Ser Lys Asn Phe Gly Ala Lys Tyr Glu Leu Gly Lys
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Glu Ser Arg Val Leu Glu Phe Leu His Ala Leu Glu Pro Leu Ala Tyr
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Arg Arg Met Asp Phe Glu Glu Phe Cys Ala Ala Ala Ile Ser Pro Tyr
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Gln Gln Phe Glu Gln Glu Gly Asn Arg Val Ile Ser Val Glu Glu Leu
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Ala Gln Glu Leu Asn Leu Ala Pro Thr His Tyr Ser Ile Val Gln Asp
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Pro Pro Ser Pro Ala Lys His Ile Arg Ala Leu Leu Ala Arg Xaa His
35 40 45

Gly Ser Val Lys Pro Asn Glu Ala Ser Ile Pro Glu Ala Ser Xaa Cys
 50 55 60

Glu Leu Gly Leu Asp Lys Ser Phe Gly Phe Ala Lys Gln Phe Ser Ala
65 70 75 80

His Tyr Glu Leu Ser Asp Glu Xaa Gly Arg Gly His Phe Gly Tyr Thr
85 90 95

Cys Ser Ala Lys Gly Lys Gly Ala Phe Lys Gly Leu Asn Val Ala
100 105 110

Val Lys Val Ile Pro Lys Ala Lys Met Thr Thr Ala Ile Ala Ile Glu
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Phe Ser Ser Lys Glu Glu Asn Ser Pro Leu Lys Val Ile Asp Phe Gly
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Leu Ser Asp Phe Val Lys Pro Asp Glu Arg Leu Asn Asp Ile Val Gly
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65	70	75	80
Gly His Gly Ser Phe Gly Thr Val Phe Gln Ala Lys Cys Leu Glu Thr			
85	90	95	
Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr Lys			
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Asn Arg Glu Leu Gln Thr Met Arg Val Leu Asp His Pro Asn Val Val			
115	120	125	
Ala Leu Lys His Cys Phe Phe Ser Lys Thr Glu Lys Glu Glu Leu Tyr			
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Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Ala His Arg Val Ile			
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Lys His Tyr Asn Lys Met Asn Gln Arg Met Pro Leu Ile Tyr Ala Lys			
165	170	175	
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Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val Asn			
195	200	205	
Pro His Thr His Gln Leu Lys Leu Cys Asp Phe Gly Ser Ala Lys Val			
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Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr			
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Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala Ile			
245	250	255	
Asp Val Gly Ser Ala Gly Cys Val Leu Ala Glu Leu Leu Gly Gln			
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Pro Leu Phe Pro Gly Glu Ser Gly Val Asp Gin Leu Val Glu Ile Ile			
275	280	285	

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Asn Tyr Thr Glu Phe Lys Pro Gin Ile Lys Ala His Pro Trp His
305 310 315 320

Lys Ile Phe His Lys Arg Met Pro Ala Glu Ala Val Asp Leu Val Ser
325 330 335

Arg Leu Leu Gln Tyr Ser Pro Lys Leu Arg Ser Thr Ala Leu Glu Ala
340 345 350

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355 360 365

Pro Asn Gly Arg Phe Leu Pro Pro Leu Phe Asn Phe Lys Pro His Glu
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Ile Arg Asp Asp Lys Glu Xaa Glu Xaa Xaa Thr Ile Ile Asn Xaa Xaa
 35 40 45

Gly Thr Glu Xaa Gly His Ile Ile Val Thr Thr Thr Gly Gly Xaa Asn
 50 55 60

Gly Xaa Pro Lys Xaa Thr Val Ser Tyr Met Ala Xaa Arg Ile Val Gly
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Gln Gly Ser Phe Gly Ile Val Phe Gln Ala Lys Phe Trp Arg Gln Gly
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35 40 45

Met Lys Ile Arg Asp Asp Arg Glu Met Glu Ala Thr Val Val Asp Gly
50 55 60

Asn Gly Thr Glu Thr Gly His Ile Ile Val Thr Thr Ile Gly Gly Arg
65 70 75 80

Asn Gly Gln Pro Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val Val
85 90 95

Gly His Gly Ser Phe Gly Val Val Phe Gln Ala Lys Cys Leu Glu Thr
100 105 110

Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr Lys
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130 135 140

Ala Leu Lys His Cys Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu Tyr
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Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Val Asn Arg Val Ile
165 170 175

Lys His Tyr Asn Lys Phe Asn Gln Arg Met Pro Leu Ile Tyr Val Lys
180 185 190

Leu Tyr Thr Tyr Gln Ile Phe Arg Ala Leu Ser Tyr Ile His Arg Cys
195 200 205

Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val Asn
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Pro His Thr His Gln Val Lys Leu Cys Asp Phe Gly Ser Ala Lys Val
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Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr
245 250 255

Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala Ile
260 265 270

Asp Val Trp Ser Val Gly Cys Val Leu Ala Glu Leu Leu Leu Gly Gln
275 280 285

Pro Leu Phe Pro Gly Glu Ser Gly Val Asp Gln Leu Val Glu Ile Ile
 290 295 300
 Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile Lys Cys Met Asn Pro
 305 310 315 320
 Asn Tyr Thr Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp His
 325 330 335
 Lys Ile Phe His Lys Arg Met Pro Pro Glu Ala Val Asp Leu Val Ser
 340 345 350
 Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Cys Thr Val Leu Asp Ala
 355 360 365
 Leu Asp Ala Pro Phe Pro Leu Asp Glu Phe Arg Asp Pro Asn Pro Arg
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 Leu Pro Asn Gly Pro Ile Xaa Pro Thr Thr Ile Asn Ser Asn Pro
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 <213> Triticum aestivum

<220>
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 gcacggagg ggcggggcgc cgtatggca gggggaaacgcg gccatgcggc gtcatccat 180
 ctccaccacc atccggcgca aaacaacggc gcggccaaacgc acggatggc acatggcgga 240
 ggcgcgttgg ggcactgtt cgtttggcat cgtttttgcg gctaaatgcc tggaaaacccgg 300
 ggagatggtg ggcattaaga aggtactgca ggacagacgg tacaagaacc gtgagctgca 360
 gcttatgcgt tcgtatgcatttccatgt tgcttcctc aagcaactgt ttcttcac 420
 cacaatgtt gatgtatgtt tctgttgcacccgt tgctatggag tatgttccgg agacgcata 480
 ccgcgttgcgtt aagcaactaca ttatgtccaa ccaggggatgc cggcttataatc atgtcaatgc 540
 ttatcatgtat cagctttta gagggctagc ttatgttcat actgttccag gagtttgc 600
 caggatgttgcg aaacccaaaa atgttgcgtt tgatcttca accccatcaag tcaagatctg 660
 tgactttggaa agtgtcaaaatg tttttggatcc ttgttgcaccc aacatagcat acatatgtc 720
 tcgcgtactat cgtgtccctg agtctatcatat ttgttgcactt gatctatcca ttcaatata 780
 catatgttca gctgtatgtt ttgttgcaga gctacttctt ggtcagccct tggttccagg 840
 agagactgtcg gttgtatgcg tagtgttgcat ttcaatgtt ttgttgcactt caacccgtga 900
 ggaatattccg tgcatgttacc ccaactataccat cggatgttgcgggatccatgttgc 960
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 cttttctccatg tatttcaccaa atctacgttg cactgttgcgtt gatgtatgttgc 1080
 cttttggatccatgttgcgttgcgggatccatgttgcgggatccatgttgcgggatccatgttgc 1140
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 ggaacatgtt cggatgttgcgggatccatgttgcgttgcgggatccatgttgcgggatccatgttgc 1260
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<210> 16
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 <212> PRT
 <213> Triticum aestivum

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Pro	Pro	Thr	Ala	Val	Ala	Cys	Glu	Lys	Lys	Gln	Gln	Asp	Gly	Glu	Ala
				20				25					30		
Pro	Tyr	Ala	Glu	Gly	Asn	Asp	Ala	Met	Thr	Gly	His	Ile	Ile	Ser	Thr
	35					40						45			
Thr	Ile	Gly	Gly	Lys	Asn	Gly	Glu	Pro	Lys	Gln	Thr	Ile	Ser	Tyr	Met
	50					55					60				
Ala	Glu	Arg	Val	Val	Gly	Thr	Gly	Ser	Phe	Gly	Ile	Val	Phe	Gln	Ala
65					70					75				80	
Lys	Cys	Leu	Glu	Thr	Gly	Glu	Met	Val	Gly	Ile	Lys	Lys	Val	Leu	Gln
					85				90					95	
Asp	Arg	Arg	Tyr	Lys	Asn	Arg	Glu	Leu	Gln	Leu	Met	Arg	Ser	Met	Ile
	100					105						110			
His	Ser	Asn	Val	Val	Ser	Leu	Lys	His	Cys	Phe	Phe	Ser	Thr	Thr	Ser
	115					120						125			
Arg	Asp	Glu	Leu	Phe	Leu	Asn	Leu	Val	Met	Glu	Tyr	Val	Pro	Glu	Thr
	130					135					140				
Leu	Tyr	Arg	Val	Leu	Lys	His	Tyr	Ser	Asn	Ala	Asn	Gln	Gly	Met	Pro
145					150					155				160	
Leu	Ile	Tyr	Val	Lys	Leu	Tyr	Met	Tyr	Gln	Leu	Phe	Arg	Gly	Leu	Ala
	165					170				175					
Tyr	Val	His	Thr	Val	Pro	Gly	Val	Cys	His	Arg	Asp	Val	Lys	Pro	Gln
	180					185					190				
Asn	Val	Leu	Val	Asp	Pro	Leu	Thr	His	Gln	Val	Lys	Ile	Cys	Asp	Phe
	195					200					205				
Gly	Ser	Ala	Lys	Val	Leu	Val	Pro	Gly	Glu	Pro	Asn	Ile	Ala	Tyr	Ile
	210					215					220				
Cys	Ser	Arg	Tyr	Tyr	Arg	Ala	Pro	Glu	Leu	Ile	Phe	Gly	Ala	Thr	Glu
225					230				235				240		
Tyr	Thr	Thr	Ser	Ile	Asp	Ile	Trp	Ser	Ala	Gly	Cys	Val	Leu	Ala	Glu
	245							250				255			
Leu	Leu	Leu	Gly	Gln	Pro	Leu	Phe	Pro	Gly	Glu	Thr	Ala	Val	Asp	Gln
	260					265					270				
Leu	Val	Glu	Ile	Ile	Lys	Val	Leu	Gly	Thr	Pro	Thr	Arg	Glu	Glu	Ile
	275					280					285				

Arg Cys Met Asn Pro Asn Tyr Thr Glu Phe Arg Phe Pro Gln Ile Lys
290 295 300

Ala His Pro Trp His Lys Ile Phe His Lys Arg Met Pro Ala Glu Ala
305 310 315 320

Ile Asp Leu Ala Ser Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Cys
325 330 335

Thr Ala Leu Asp Ala Cys Ala His Ser Phe Phe Asp Glu Leu Arg Glu
340 345 350

Pro Asn Ala Arg Leu Pro Asn Gly Arg Pro Phe Pro Pro Leu Phe Asn
355 360 365

Phe Lys Pro Glu Leu Ala Asn Ala Ser Pro Glu Leu Ile Asn Arg Leu
370 375 380

Val Pro Glu His Val Arg Arg Gln Asn Gly Pro Asn Phe Ala His Ala
385 390 395 400

Gly Ser

<210> 17

<211> 639

<212> PRT

<213> Zea mays

<400> 17

Met Gly Asn Thr Cys Val Gly Pro Ser Ile Thr Met Asn Gly Phe Phe
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Gln Ser Val Ser Thr Ala Leu Trp Lys Thr Pro Gln Glu Gly Asp Ala
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Leu Pro Ala Ala Ala Asn Gly Pro Gly Gly Pro Ala Gly Ala Gly Ser
35 40 45

Gln Ser Ala Leu Pro Lys Pro Ala Ser Asp Val His His Val Ala Val
50 55 60

Gln Ser Glu Ala Pro Glu Pro Val Lys Ile Ala Ala Tyr His Ser Glu
65 70 75 80

Pro Ala Pro Ala Val Arg Ser Glu Ala Pro Glu Pro Val Lys Ile Ala
85 90 95

Ala Ser His Ser Glu Pro Ala Pro Met Ala Ala Lys Pro Gly Gly Ala
100 105 110

Ala Ala Asn Ala Ser Pro Ser Pro Ser Pro Arg Pro Arg Pro Gln Val
115 120 125

Lys Arg Val Ser Ser Ala Gly Leu Leu Leu Gly Ser Val Leu Arg Arg
130 135 140

Lys Thr Glu Asn Leu Lys Asp Lys Tyr Ser Leu Gly Arg Arg Leu Gly
145 150 155 160

Gln Gly Gln Phe Gly Thr Thr His Leu Cys Val Glu Arg Ala Thr Gly
 165 170 175
 Lys Glu Leu Ala Cys Lys Ser Ile Leu Lys Arg Lys Leu Gly Ser Asp
 180 185 190
 Asp Asp Val Glu Asp Val Arg Arg Glu Ile Gln Ile Met His His Leu
 195 200 205
 Ala Gly His Pro Ser Val Val Gly Ile Arg Gly Ala Tyr Glu Asp Ala
 210 215 220
 Val Ala Val His Leu Val Met Glu Leu Cys Gly Gly Glu Leu Phe
 225 230 235 240
 Asp Arg Ile Val Arg Arg Gly His Tyr Thr Glu Arg Lys Ala Ala Glu
 245 250 255
 Leu Ala Arg Val Ile Val Gly Val Val Glu Ala Cys His Ser Met Gly
 260 265 270
 Val Met His Arg Asp Leu Lys Pro Glu Asn Phe Leu Phe Ala Asp His
 275 280 285
 Ser Glu Glu Ala Ala Leu Lys Thr Ile Asp Phe Gly Leu Ser Ile Phe
 290 295 300
 Phe Arg Pro Gly Gln Ile Phe Thr Asp Val Val Gly Ser Pro Tyr Tyr
 305 310 315 320
 Val Ala Pro Glu Val Leu Lys Lys Arg Tyr Gly Pro Glu Ala Asp Val
 325 330 335
 Trp Ser Ala Gly Val Ile Ile Tyr Ile Leu Leu Cys Gly Val Pro Pro
 340 345 350
 Phe Trp Ala Glu Asn Glu Gln Gly Ile Phe Glu Glu Val Leu His Gly
 355 360 365
 Arg Leu Asp Phe Glu Ser Glu Pro Trp Pro Ser Ile Ser Asp Gly Ala
 370 375 380
 Lys Asp Leu Val Arg Arg Met Leu Val Arg Asp Pro Arg Lys Arg Leu
 385 390 395 400
 Thr Ala His Glu Val Leu Arg His Pro Trp Val Gln Val Gly Gly Val
 405 410 415
 Ala Pro Asp Arg Pro Leu Asp Ser Ala Val Leu Ser Arg Met Lys Gln
 420 425 430
 Phe Ser Ala Met Asn Lys Leu Lys Lys Met Ala Leu Arg Val Ile Ala
 435 440 445
 Glu Asn Leu Ser Glu Asp Glu Ile Ala Gly Leu Arg Glu Met Phe Lys
 450 455 460
 Met Ile Asp Ala Asp Asn Ser Gly Gln Ile Thr Phe Glu Glu Leu Lys
 465 470 475 480

Val Gly Leu Glu Lys Val Gly Ala Asn Leu Gln Glu Ser Glu Ile Tyr
 485 490 495
 Ala Leu Met Gln Ala Ala Asp Val Asp Asn Asn Gly Thr Ile Asp Tyr
 500 505 510
 Gly Glu Phe Ile Ala Ala Thr Leu His Leu Asn Lys Val Glu Arg Glu
 515 520 525
 Asp His Leu Phe Ala Ala Phe Gln Tyr Phe Asp Lys Asp Gly Ser Gly
 530 535 540
 Tyr Ile Thr Ala Asp Glu Leu Gln Val Ala Cys Glu Glu Phe Gly Leu
 545 550 555 560
 Gly Asp Val Gln Leu Glu Asp Leu Ile Gly Glu Val Asp Gln Asp Asn
 565 570 575
 Asp Gly Arg Ile Asp Tyr Asn Glu Phe Val Ala Met Met Gln Lys Pro
 580 585 590
 Thr Val Gly Gly Ser Arg Arg Arg Pro Ile Cys Arg Thr Ala Ser Ala
 595 600 605
 Ser Gly Ser Ala Ser Gly Ser Gly Arg Arg Ser Gly Trp Pro Arg Pro
 610 615 620
 Leu Cys Leu Trp Leu Pro Cys Cys Leu Arg Val Gly Val Asp Asp
 625 630 635
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 His Asp Ala Asp Pro Ser Gly Ala Gly Ser Val Ala Pro Pro Ser Pro
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 Leu Pro Ala Asn Gly Ala Pro Leu Pro Ala Thr Pro Arg Arg His Lys
 35 40 45
 Ser Gly Ser Thr Thr Pro Val His His His Gln Ala Ala Thr Pro Gly
 50 55 60
 Ala Ala Ala Trp Pro Ser Pro Tyr Pro Ala Gly Gly Ala Ser Pro Leu
 65 70 75 80
 Pro Ala Gly Val Ser Pro Ser Pro Ala Arg Ser Thr Pro Arg Arg Phe
 85 90 95
 Phe Lys Arg Pro Phe Pro Pro Ser Pro Ala Lys His Ile Lys Ala
 100 105 110
 Thr Leu Ala Lys Arg Leu Gly Gly Lys Pro Lys Glu Gly Thr Ile
 115 120 125

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Pro Glu Glu Gly Gly Ala Gly Ala Gly Ala Gly Ala Gly Ala
130 135 140

Gly Ala Ala Val Gly Ala Ala Asp Ser Ala Glu Ala Asp Arg Pro Leu
145 150 155 160

Asp Lys Thr Phe Gly Phe Ala Lys Asn Phe Gly Ala Lys Tyr Asp Leu
165 170 175

Gly Lys Glu Val Gly Arg Gly His Phe Gly His Thr Cys Ser Ala Val
180 185 190

Val Lys Lys Gly Glu His Lys Gly His Thr Val Ala Val Lys Ile Ile
195 200 205

Ser Lys Ala Lys Met Thr Thr Ala Ile Ser Ile Glu Asp Val Arg Arg
210 215 220

Glu Val Lys Ile Leu Lys Ala Leu Ser Gly His Asp Asn Leu Val Arg
225 230 235 240

Phe Tyr Asp Ala Cys Glu Asp Ala Leu Asn Val Tyr Ile Val Met Glu
245 250 255

Leu Cys Glu Gly Gly Glu Leu Leu Asp Arg Ile Leu Ala Arg Gly Gly
260 265 270

Arg Tyr Thr Glu Glu Asp Ala Lys Ala Ile Ile Val Gln Ile Leu Ser
275 280 285

Val Val Ala Phe Cys His Leu Gln Gly Val Val His Arg Asp Leu Lys
290 295 300

Pro Glu Asn Phe Leu Phe Thr Thr Arg Asp Glu Ser Ala Pro Met Lys
305 310 315 320

Leu Ile Asp Phe Gly Leu Ser Asp Phe Ile Arg Pro Asp Glu Arg Leu
325 330 335

Asn Asp Ile Val Gly Ser Ala Tyr Tyr Val Ala Pro Glu Val Leu His
340 345 350

Arg Ser Tyr Ser Met Glu Ala Asp Ile Trp Ser Ile Gly Val Ile Thr
355 360 365

Tyr Ile Leu Leu Cys Gly Ser Arg Pro Phe Trp Ala Arg Thr Glu Ser
370 375 380

Gly Ile Phe Arg Ser Val Leu Arg Ala Asp Pro Asn Phe Asp Asp Ser
385 390 395 400

Pro Trp Pro Ser Val Ser Ala Glu Ala Lys Asp Phe Val Lys Arg Phe
405 410 415

Leu Asn Lys Asp Tyr Arg Lys Arg Met Thr Ala Val Gln Ala Leu Thr
420 425 430

His Pro Trp Leu Arg Asp Glu Gln Arg Gln Ile Pro Leu Asp Ile Leu
435 440 445

Ile Phe Arg Leu Val Lys Gln Tyr Leu Arg Ala Thr Pro Leu Lys Arg
 450 455 460
 Leu Ala Leu Lys Ala Leu Ser Lys Ala Leu Ser Glu Asp Glu Leu Leu
 465 470 475 480
 Tyr Leu Arg Leu Gln Phe Lys Leu Leu Glu Pro Arg Asp Gly Phe Val
 485 490 495
 Ser Leu Asp Asn Phe Arg Thr Ala Leu Thr Arg Tyr Ser Thr Asp Ala
 500 505 510
 Met Arg Glu Ser Arg Val Leu Glu Phe Gln His Ala Leu Glu Pro Leu
 515 520 525
 Ala Tyr Arg Lys Met Asp Phe Glu Glu Phe Cys Ala Ala Ala Ile Ser
 530 535 540
 Pro Tyr Gin Leu Glu Ala Leu Glu Arg Trp Glu Glu Ile Ala Gly Thr
 545 550 555 560
 Ala Phe Gln His Phe Glu Gln Glu Gly Asn Arg Val Ile Ser Val Glu
 565 570 575
 Glu Leu Ala Gln Glu Leu Asn Leu Ala Pro Thr His Tyr Ser Ile Val
 580 585 590
 Gln Asp Trp Ile Arg Lys Ser Asp Gly Lys Leu Asn Phe Leu Gly Phe
 595 600 605
 Thr Lys Phe Leu His Gly Val Thr Ile Arg Gly Ser Asn Thr Arg Arg
 610 615 620
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 Pro Val Ser Gly Glu Thr Asn Glu Ala Pro Thr Asn Ser Gln Pro Pro
 20 25 30
 Ala Lys Ser Ser Gly Phe Pro Phe Tyr Ser Pro Ser Pro Val Pro Ser
 35 40 45
 Leu Phe Lys Ser Ser Pro Ser Val Ser Ser Ser Val Ser Ser Thr Pro
 50 55 60
 Leu Arg Ile Phe Lys Arg Pro Phe Pro Pro Ser Pro Ala Lys His
 65 70 75 80
 Ile Arg Ala Phe Leu Ala Arg Arg Tyr Gly Ser Val Lys Pro Asn Glu
 85 90 95

Val	Ser	Ile	Pro	Glu	Gly	Lys	Glu	Ile	Gly	Leu	Asp	Lys	Ser		
				100			105				110				
Phe	Gly	Phe	Ser	Lys	Gln	Phe	Ala	Ser	His	Tyr	Glu	Ile	Asp	Gly	Glu
				115			120				125				
Val	Gly	Arg	Gly	His	Phe	Gly	Tyr	Thr	Cys	Ser	Ala	Lys	Gly	Lys	Lys
				130			135				140				
Gly	Ser	Leu	Lys	Gly	Gln	Glu	Val	Ala	Val	Lys	Val	Ile	Pro	Lys	Ser
				145			150			155			160		
Lys	Met	Thr	Thr	Ala	Ile	Ala	Ile	Glu	Asp	Val	Ser	Arg	Glu	Val	Lys
				165			170			175					
Met	Leu	Arg	Ala	Leu	Thr	Gly	His	Lys	Asn	Leu	Val	Gln	Phe	Tyr	Asp
				180			185			190					
Ala	Phe	Glu	Asp	Asp	Glu	Asn	Val	Tyr	Ile	Val	Met	Glu	Leu	Cys	Lys
				195			200			205					
Gly	Gly	Glu	Leu	Leu	Asp	Lys	Ile	Leu	Gln	Arg	Gly	Gly	Lys	Tyr	Ser
				210			215			220					
Glu	Asp	Asp	Ala	Lys	Lys	Val	Met	Val	Gln	Ile	Leu	Ser	Val	Val	Ala
				225			230			235			240		
Tyr	Cys	His	Leu	Gln	Gly	Val	Val	His	Arg	Asp	Leu	Lys	Pro	Glu	Asn
				245			250			255					
Phe	Leu	Phe	Ser	Thr	Lys	Asp	Glu	Thr	Ser	Pro	Leu	Lys	Ala	Ile	Asp
				260			265			270					
Phe	Gly	Leu	Ser	Asp	Tyr	Val	Lys	Pro	Asp	Glu	Arg	Leu	Asn	Asp	Ile
				275			280			285					
Val	Gly	Ser	Ala	Tyr	Tyr	Val	Ala	Pro	Glu	Val	Leu	His	Arg	Thr	Tyr
				290			295			300					
Gly	Thr	Glu	Ala	Asp	Met	Trp	Ser	Ile	Gly	Val	Ile	Ala	Tyr	Ile	Leu
				305			310			315			320		
Leu	Cys	Gly	Ser	Arg	Pro	Phe	Trp	Ala	Arg	Thr	Glu	Ser	Gly	Ile	Phe
				325			330			335			335		
Arg	Ala	Val	Leu	Lys	Ala	Glu	Pro	Asn	Phe	Glu	Glu	Ala	Pro	Trp	Pro
				340			345			350			350		
Ser	Leu	Ser	Pro	Glu	Ala	Val	Asp	Phe	Val	Lys	Arg	Leu	Leu	Asn	Lys
				355			360			365					
Asp	Tyr	Arg	Lys	Arg	Leu	Thr	Ala	Ala	Gln	Ala	Leu	Cys	His	Pro	Trp
				370			375			380					
Leu	Val	Gly	Ser	His	Glu	Leu	Lys	Ile	Pro	Ser	Asp	Met	Ile	Ile	Tyr
				385			390			395			400		
Lys	Leu	Val	Lys	Val	Tyr	Ile	Met	Ser	Thr	Ser	Leu	Arg	Lys	Ser	Ala
				405			410			415					

Leu Ala Ala Leu Ala Lys Thr Leu Thr Val Pro Gln Leu Ala Tyr Leu
 420 425 430
 Arg Glu Gln Phe Thr Leu Leu Gly Pro Ser Lys Asn Gly Tyr Ile Ser
 435 440 445
 Met Gln Asn Tyr Lys Thr Ala Ile Leu Lys Ser Ser Thr Asp Ala Met
 450 455 460
 Lys Asp Ser Arg Val Phe Asp Phe Val His Met Ile Ser Cys Leu Gln
 465 470 475 480
 Tyr Lys Lys Leu Asp Phe Glu Glu Phe Cys Ala Ser Ala Leu Ser Val
 485 490 495
 Tyr Gln Leu Glu Ala Met Glu Thr Trp Glu Gln His Ala Arg Arg Ala
 500 505 510
 Tyr Glu Leu Phe Glu Lys Asp Gly Asn Arg Pro Ile Met Ile Glu Glu
 515 520 525
 Leu Ala Ser Glu Leu Gly Leu Gly Pro Ser Val Pro Val His Val Val
 530 535 540
 Leu Gln Asp Trp Ile Arg His Ser Asp Gly Lys Leu Ser Phe Leu Gly
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 565 570 575
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 Asp Lys Glu Met Glu Ala Thr Val Val Asp Gly Asn Gly Thr Glu Thr
 35 40 45
 Gly His Ile Ile Val Thr Thr Ile Gly Gly Arg Asn Gly Gln Pro Lys
 50 55 60
 Gln Thr Ile Ser Tyr Met Ala Glu Arg Val Val Gly His Gly Ser Phe
 65 70 75 80
 Gly Val Val Phe Gln Ala Lys Cys Leu Glu Thr Gly Glu Thr Val Ala
 85 90 95
 Ile Lys Lys Val Leu Gln Asp Arg Arg Tyr Lys Asn Arg Glu Leu Gln
 100 105 110
 Thr Met Arg Leu Leu Asp His Pro Asn Val Val Ser Leu Lys His Cys
 115 120 125

Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu Tyr Leu Asn Leu Val Leu
 130 135 140
 Glu Tyr Val Pro Glu Thr Val His Arg Val Ile Lys His Tyr Asn Lys
 145 150 155 160
 Leu Asn Gln Arg Met Pro Leu Ile Tyr Val Lys Leu Tyr Thr Tyr Gln
 165 170 175
 Ile Phe Arg Ala Leu Ser Tyr Ile His Arg Cys Ile Gly Val Cys His
 180 185 190
 Arg Asp Ile Lys Pro Gln Asn Leu Leu Val Asn Pro His Thr His Gln
 195 200 205
 Val Lys Leu Cys Asp Phe Gly Ser Ala Lys Val Leu Val Lys Gly Glu
 210 215 220
 Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr Arg Ala Pro Glu Leu
 225 230 235 240
 Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala Ile Asp Val Trp Ser Ala
 245 250 255
 Gly Cys Val Leu Ala Glu Leu Leu Leu Gly Gln Pro Leu Phe Pro Gly
 260 265 270
 Glu Ser Gly Val Asp Gln Leu Val His Ile Ile Lys Val Leu Gly Thr
 275 280 285
 Pro Thr Arg Glu Glu Ile Lys Cys Met Asn Pro Asn Tyr Thr Glu Phe
 290 295 300
 Lys Phe Pro Gln Ile Lys Ala His Pro Trp His Lys Ile Phe His Lys
 305 310 315 320
 Arg Met Pro Pro Glu Ala Val Asp Leu Val Ser Arg Leu Leu Gln Tyr
 325 330 335
 Ser Pro Asn Leu Arg Ser Ala Ala Leu Asp Thr Leu Val His Pro Phe
 340 345 350
 Phe Asp Glu Leu Arg Asp Pro Asn Ala Arg Leu Pro Asn Gly Arg Phe
 355 360 365
 Leu Pro Pro Ala Phe His Phe Lys Pro His Glu Leu Lys Gly Val Pro
 370 375 380
 Leu Glu Met Val Ala Lys Leu Val Pro Glu His Ala Arg Lys Gln Cys
 385 390 395 400
 Pro Trp Leu Gly Leu
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 <211> 412
 <212> PRT
 <213> *Medicago sativa*

<400> 21
 Met Met Ala Ser Gly Gly Val Ala Pro Ala Ser Gly Phe Ile Asp Lys
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Asn Ala Ser Ser Val Gly Val Glu Lys Leu Pro Glu Glu Met Asn Asp
 20 25 30

Met Lys Ile Arg Asp Asp Lys Glu Met Glu Ala Ala Thr Ile Val Asp
 35 40 45

Gly Asn Gly Thr Glu Thr Gly His Ile Ile Val Thr Thr Ile Gly Gly
 50 55 60

Lys Asn Gly Gln Pro Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val
 65 70 75 80

Val Gly His Gly Ser Phe Gly Val Val Phe Gln Ala Lys Cys Leu Glu
 85 90 95

Thr Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr
 100 105 110

Lys Asn Arg Glu Leu Gln Thr Met Arg Leu Leu Asp His Pro Asn Val
 115 120 125

Val Ser Leu Lys His Cys Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu
 130 135 140

Tyr Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Val Ser Arg Val
 145 150 155 160

Ile Arg His Tyr Asn Lys Met Asn Gln Arg Met Pro Met Ile Tyr Val
 165 170 175

Lys Leu Tyr Ser Tyr Gln Ile Cys Arg Ala Leu Ala Tyr Ile His Asn
 180 185 190

Ser Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val
 195 200 205

Asn Pro His Thr His Gln Leu Lys Ile Cys Asp Phe Gly Ser Ala Lys
 210 215 220

Val Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr
 225 230 235 240

Tyr Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala
 245 250 255

Ile Asp Ile Trp Ser Ala Gly Cys Val Leu Gly Glu Leu Leu Gly
 260 265 270

Gln Pro Leu Phe Pro Gly Glu Ser Gly Val Asp Gln Leu Val Glu Ile
 275 280 285

Ile Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile Lys Cys Met Asn
 290 295 300

Pro Asn Tyr Thr Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp
 305 310 315 320

His Lys Ile Phe His Lys Arg Met Pro Pro Glu Ala Val Asp Leu Val
 325 330 335
 Ser Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Ser Thr Ala Leu Glu
 340 345 350
 Ala Leu Val His Pro Phe Tyr Asp Asp Val Arg Asp Pro Asn Thr Arg
 355 360 365
 Leu Pro Asn Gly Arg Phe Leu Pro Pro Leu Phe Asn Phe Lys Val Asn
 370 375 380
 Glu Leu Lys Gly Val Pro Ala Glu Met Leu Val Lys Leu Val Pro Pro
 385 390 395 400
 His Ala Arg Lys Gln Cys Ala Leu Phe Gly Ser Ser
 405 410
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 Gly Asp Gly Glu Ile Gly Val Asp Asp Ile Leu Pro Glu Glu Met Ser
 20 25 30
 Asp Met Lys Ile Arg Asp Asp Arg Glu Met Glu Ala Thr Val Val Asp
 35 40 45
 Gly Asn Gly Thr Glu Thr Gly His Ile Ile Val Thr Thr Ile Gly Gly
 50 55 60
 Arg Asn Gly Gln Pro Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val
 65 70 75 80
 Val Gly His Gly Ser Phe Gly Val Val Phe Gln Ala Lys Cys Leu Glu
 85 90 95
 Thr Gly Glu Thr Val Ala Ile Lys Lys Val Leu Gln Asp Lys Arg Tyr
 100 105 110
 Lys Asn Arg Glu Leu Gln Thr Met Arg Leu Leu Asp His Pro Asn Val
 115 120 125
 Val Ser Leu Lys His Cys Phe Phe Ser Thr Thr Glu Lys Asp Glu Leu
 130 135 140
 Tyr Leu Asn Leu Val Leu Glu Tyr Val Pro Glu Thr Val His Arg Val
 145 150 155 160
 Ile Lys His Tyr Ser Lys Leu Asn Gln Arg Met Pro Met Ile Tyr Val
 165 170 175
 Lys Leu Tyr Thr Tyr Gln Ile Phe Arg Ala Leu Ser Tyr Ile His Arg
 180 185 190

Cys Ile Gly Val Cys His Arg Asp Ile Lys Pro Gln Asn Leu Leu Val
 195 200 205
 Asn Pro His Thr His Gln Val Lys Leu Cys Asp Phe Gly Ser Ala Lys
 210 215 220
 Val Leu Val Lys Gly Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr
 225 230 235 240
 Tyr Arg Ala Pro Glu Leu Ile Phe Gly Ala Thr Glu Tyr Thr Thr Ala
 245 250 255
 Ile Asp Val Trp Ser Val Gly Cys Val Leu Ala Glu Leu Leu Gly
 260 265 270
 Gln Pro Leu Phe Pro Gly Glu Arg Gly Val Asp Gln Leu Val Glu Ile
 275 280 285
 Ile Lys Val Leu Gly Thr Pro Thr Arg Glu Glu Ile Lys Cys Met Asn
 290 295 300
 Pro Asn Tyr Thr Glu Phe Lys Phe Pro Gln Ile Lys Ala His Pro Trp
 305 310 315 320
 His Lys Ile Phe His Lys Arg Met Pro Ala Glu Ala Val Asp Leu Val
 325 330 335
 Ser Arg Leu Leu Gln Tyr Ser Pro Asn Leu Arg Cys Gln Ala Leu Asp
 340 345 350
 Cys Leu Thr His Pro Phe Phe Asp Glu Leu Arg Asp Pro Asn Ala Arg
 355 360 365
 Leu Pro Thr Gly Arg Phe Leu Pro Pro Leu Phe Asn Phe Lys Pro His
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 Glu Leu Lys Gly Val Pro Val Glu Thr Leu Met Lys Leu Val Pro Glu
 385 390 395 400
 His Ala Arg Lys Gln Cys Pro Phe Leu Gly Leu
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 <213> Arabidopsis thaliana
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 Leu Gln Leu His Asp Gly Asp Ala Leu Lys Arg Arg Pro Glu Leu Asp
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 35 40 45
 Thr Gly His Ile Ile Ser Thr Thr Ile Gly Gly Lys Asn Gly Glu Pro
 50 55 60

Lys Gln Thr Ile Ser Tyr Met Ala Glu Arg Val Val Gly Thr Gly Ser
 65 70 75 80

Phe Gly Ile Val Phe Gln Ala Lys Cys Leu Glu Thr Gly Glu Ser Val
 85 90 95

Ala Ile Lys Lys Val Leu Gln Asp Arg Arg Tyr Lys Asn Arg Glu Leu
 100 105 110

Gln Leu Met Arg Pro Met Asp His Pro Asn Val Ile Ser Leu Lys His
 115 120 125

Cys Phe Phe Ser Thr Thr Ser Arg Asp Glu Leu Phe Leu Asn Leu Val
 130 135 140

Met Glu Tyr Val Pro Glu Thr Leu Tyr Arg Val Leu Arg His Tyr Thr
 145 150 155 160

Ser Ser Asn Gln Arg Met Pro Ile Phe Tyr Val Lys Leu Tyr Thr Tyr
 165 170 175

Gln Ile Phe Arg Gly Leu Ala Tyr Ile His Thr Val Pro Gly Val Cys
 180 185 190

His Arg Asp Val Lys Pro Gln Asn Leu Leu Val Asp Pro Leu Thr His
 195 200 205

Gln Val Lys Leu Cys Asp Phe Gly Ser Ala Lys Val Leu Val Lys Gly
 210 215 220

Glu Pro Asn Ile Ser Tyr Ile Cys Ser Arg Tyr Tyr Arg Ala Pro Glu
 225 230 235 240

Leu Ile Phe Gly Ala Thr Glu Tyr Thr Ala Ser Ile Asp Ile Trp Ser
 245 250 255

Ala Gly Cys Val Leu Ala Glu Leu Leu Gly Gln Pro Leu Phe Pro
 260 265 270

Gly Glu Asn Ser Val Asp Gln Leu Val Glu Ile Ile Lys Val Leu Gly
 275 280 285

Thr Pro Thr Arg Glu Glu Ile Arg Cys Met Asn Pro Asn Tyr Thr Asp
 290 295 300

Phe Arg Phe Pro Gln Ile Lys Ala His Pro Trp His Lys Val Phe His
 305 310 315 320

Lys Arg Met Pro Pro Glu Ala Ile Asp Leu Ala Ser Arg Leu Leu Gln
 325 330 335

Tyr Ser Pro Ser Leu Arg Cys Thr Ala Leu Glu Ala Cys Ala His Pro
 340 345 350

Phe Phe Asn Glu Leu Arg Glu Pro Asn Ala Arg Leu Pro Asn Gly Arg
 355 360 365

Pro Leu Pro Pro Leu Phe Asn Phe Lys Gln Glu Leu Gly Gly Ala Ser
 370 375 380

Met Glu Leu Ile Asn Arg Leu Ile Pro Glu His Val Arg Arg Gln Met
385 390 395 400

Ser Thr Gly Leu Gln Asn Ser
405

1000 900 800 700 600 500 400 300 200 100